Long chain omega-3 fatty acids and the food supply
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Long chain omega-3 fatty acid supplementation is highly recommended for the dietary management of hypertriglyceridemia, secondary cardiovascular disease prevention and high blood pressure. Functional foods can be used as vehicles to provide the recommended levels of long chain n-3PUFA, including for those who already have had a cardiovascular event and those at a high risk of developing coronary heart disease. It is noteworthy that although foods fortified with higher levels of long chain n-3PUFA need to be developed, the total fat content, particularly the level of saturated fatty acids, must not exceed the dietary guidelines. The fortified food must be convenient, palatable, with no fishy odour/flavour and no fishy eructation following consumption. The food matrix should provide minimum or no resistance for release of long chain n-3PUFA in the gastrointestinal tract to ensure maximum bioavailability. Particular attention needs to be paid to the material used for micro-emulsification (type of polysaccharides, proteins or phospholipids) as this may be an important criterion for the bioavailability of long chain n-3PUFA (1).

Quantitative data on bioavailability of long chain n-3PUFA from the n-3PUFA enriched foods is lacking in the literature, although acute and chronic effects of consuming these foods on n-3PUFA incorporation have been extensively reported. Other factors, dietary or physiological, that may affect the bioavailability of long chain n-3PUFA also merit further investigation. The development and testing of functional foods enriched with larger amounts of long chain n-3PUFA with improved bioavailability, site-specific delivery, biological and clinical effects requires a concerted team effort including food scientists/technologists, human/clinical nutritionists and food producers.

References